

**APPLICATION FOR PERMIT TO CONSOLIDATE AND RECLOSE A  
COMBINED MUNICIPAL WASTE AND CONSTRUCTION/  
DEMOLITION WASTE LANDFILL**

Submitted in duplicate to: Mary Pat Buckman  
Salt Lake Valley Health Department  
788 E. Woodoak Lane  
Murray, UT 84107

**PART I – GENERAL DATA**

1. Name of Facility: UDOT – Taylorsville Landfill
2. Site Location: 6200 South 3200 West, Taylorsville, Utah
3. Facility Owner: Utah Department of Transportation
4. Facility Operator: Landfill has been closed since approximately 1978 (24 years)
5. Contact Person: Dian McGuire or Helen Sadik-Macdonald  
Address: 4501 South 2700 West, 4<sup>th</sup> Floor, Box 148420  
Salt Lake City, Utah 84114-8420  
Telephone: (801) 965-4968
6. Type of Facility:  

<input type="checkbox"/> Class I Landfill	<input checked="" type="checkbox"/> Pre-Subtitle D Closed Landfill
<input type="checkbox"/> Class V Landfill	<input type="checkbox"/> Permit Renewal
	Original Permit Number _____
7. Property Ownership:  

<input checked="" type="checkbox"/> Presently owned by applicant
<input type="checkbox"/> To be purchased by applicant
<input type="checkbox"/> To be leased by applicant

Property Owner (if different from applicant):

Name \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Telephone \_\_\_\_\_

8. Certification of submitted information:

Specialist Dian McGuire UDOT Property Management  
*(Name of Official)* *(Title)*

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature \_\_\_\_\_ Date \_\_\_\_\_

SUBSCRIBED AND SWORN to before this \_\_\_\_\_ day of \_\_\_\_\_, 2002.

My commission expires on the \_\_\_\_\_ day of \_\_\_\_\_, 2002.

\_\_\_\_\_  
Notary Public in and for

(SEAL) \_\_\_\_\_ County, Utah

**LANDFILL CLOSURE PERMIT APPLICATION  
UDOT-TAYLORSVILLE LANDFILL  
6200 SOUTH 3200 WEST  
TAYLORSVILLE, UTAH**

December 18, 2002

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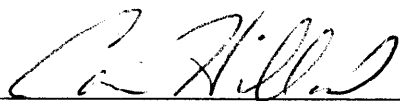
A Report Prepared For Submittal To:

Ms. Mary Pat Buckman  
Salt Lake Valley Health Department  
788 East Woodoak Lane  
Murray, Utah 84107

File No.: 21770.001

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UDOT-TAYLORSVILLE LANDFILL  
6200 SOUTH 3200 WEST  
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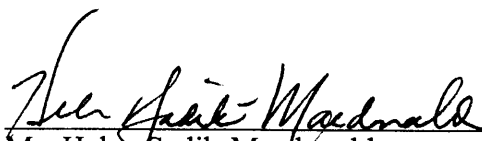
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December 18, 2002

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- A Landfill Closure Specifications
- B Engineering Calculation
- C Landfill Closure Sampling and Analysis Plan

## 1. INTRODUCTION

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### 1.1 LOCATION

The Utah Department of Transportation (UDOT) owns an approximate 126-acre vacant property in Taylorsville, Utah. This property is bounded on the east by 3200 West Street, on the south by 6200 South Street, on the west by Bangerter Highway and a residential neighborhood, and on the north by residential properties (see Figure 1). The southeast portion of this property was used to mine gravel and was subsequently backfilled with municipal waste and construction/demolition debris. The southeast gravel-pit portion of the property is approximately 30 acres. Of that area, approximately 18 acres is covered with waste and/or construction debris as shown in Figure 2 of the attached Closure Plans and Specifications.

The site is located along the eastern flank of the Oquirrh Mountains, on the western edge of the Salt Lake Valley. The UDOT parcel is underlain by interbedded lacustrine clays, sands, silts, and gravels that were deposited near the western edge of historic Lake Bonneville.

### 1.2 BACKGROUND

The site was mined for gravel for approximately 40 years, from the 1960s to the late 1990s. The southeast portion of the property was used by Salt Lake County to dispose municipal solid waste and construction debris in the 1960s and 1970s. The landfilling was reportedly discontinued in approximately 1978. The landfill is currently considered closed.

UDOT wishes to consolidate the municipal waste into a smaller footprint (6 acres) and transfer the landfill property, along with adjacent property to total 22 acres, to the City of Taylorsville to be used as a park. The remainder of the 126-acre property will then be sold by UDOT for development of commercial and residential property. This landfill closure permit application is being submitted to Salt Lake Valley Health Department because of the proposed change to the existing landfill. Because the landfill was closed prior to 1993 (pre-Subtitle D), it does not fall under the jurisdiction of Utah Department of Solid and Hazardous Waste.

### 1.3 WASTE VOLUME AND COMPOSITION

Municipal waste is deposited primarily in three areas: M1, M2, and M3 (see Figure 2). M1 and M3 appear to contain up to 40 feet of municipal waste, while M2 contains about 20 feet of waste. Construction debris is present in three areas: C1, C2, and C3. C1 appears to contain about 25 feet of debris, primarily asphalt and concrete rubble. C2 reportedly contains about 4 feet of debris, and C3 appears to have received only a few feet of material. The municipal waste cells are generally covered by 2 to 3 feet of soil, but debris is visible on the surface of the waste cells as well as on the ground surface in some areas across the site.

EWP Engineering developed approximate waste volume estimates based on their previous site investigation work in 1999. Due to the hilly nature of the site ground surface and lack of waste deposition data the waste volumes could only be approximated. The following table presents the waste volume data developed by EWP.

**ESTIMATED VOLUMES/AREAS**

Area	Waste (CY)	Overburden (CY)	Surface Area (Acres)
M1	43,800	16,700	2.4
M2	46,100	23,900	4.4
M3	169,000	26,500	4.6
<b>Municipal Waste:</b>	<b>258,900</b>	<b>67,100</b>	<b>11.4</b>
C1	19,500	*	1.3
C2	16,300	*	2.5
C3	22,000	*	2.4
<b>Construction Waste:</b>	<b>57,800</b>	<b>*</b>	<b>6.2</b>
<b>Total Estimated Waste Volume:</b>	<b>316,700</b>	<b>67,100</b>	<b>17.6</b>

\* Construction/demolition debris is exposed at ground surface; no cover volume was estimated.

## 1.4 PREVIOUS SITE WORK

### 1.4.1 Evaluating Extent of Waste

In 1980, UDOT drilled 20 test holes in the eastern portion of the site to assess the presence of landfill waste. They estimated that at least 217,000 cubic yards (yd<sup>3</sup>) of municipal waste and 44,000 yd<sup>3</sup> of construction debris were present in this area. In 1996, a number of test pits were excavated to further evaluate the limits of waste. Test pit data indicated that the limits of waste extended further west than previously believed. In 1999, EWP drilled 17 additional borings to refine the lateral and vertical extent of waste. EWP subsequently compiled the historical data and their new data to develop the final mapped limits of waste shown on Figure 2. EWP's final estimates of waste volume include approximately 259,000 yd<sup>3</sup> of municipal waste and approximately 58,000 yd<sup>3</sup> of construction debris.

### 1.4.2 Assessing Presence of Contamination

In 1995 and 1996, Maxim Technologies performed a site characterization investigation to assess the impact of the landfill on groundwater quality. In 1995, two soil borings and two groundwater monitoring wells were installed outside the footprint of the waste cells. One monitoring well was located upgradient and one downgradient of the southeast waste cell (M3). The wells were drilled to approximately 180 feet below ground surface (bgs), with the depth to the uppermost aquifer measured at approximately 170 feet bgs. In 1996, three more groundwater monitoring wells were installed downgradient of the northeast landfill cells. One of these wells was shallow and did not contain water. The remaining four deep wells were sampled by Maxim in 1995/1996 and again in 2000 by Kleinfelder.

Soil samples were analyzed for volatile organic compounds (VOCs) by SW-846 Method 8260. No VOCs were detected in the soil samples. Groundwater chemistry was similar in the upgradient and downgradient monitoring wells. While total metals concentrations were elevated due to the presence of sediment in the samples, dissolved metals concentrations did not appear elevated. No VOCs were detected in groundwater. Based on this limited subsurface

investigation, it does not appear the landfill is currently impacting groundwater or soils in the areas assessed.

#### 1.4.3 Evaluating Presence of Methane Gas

Maxim also conducted a shallow (2- to 3-foot) soil-gas survey on 200-foot centers spanning the westernmost landfill cells. The methane concentrations detected ranged from 240 parts per million (ppm) to 13,500 ppm, which is just over 1 percent methane in air. The lower explosive limit (LEL) for methane is 5 percent. Current landfill regulations require mitigation if methane concentrations exceed the LEL (5% methane) at the property boundary. Maxim Technologies' investigation concluded that methane production did not currently present a health hazard at the site.

#### 1.5 SITE CONTACTS

The UDOT contacts involved in the landfill closure project are:

Ms. Dian McGuire  
UDOT Property Management Specialist  
UDOT Right-of-Way Division  
4501 South 2700 West- 4<sup>th</sup> Floor Box 148420  
Salt Lake City, Utah 84114-8420  
(801) 965-4968

Ms. Helen Sadik-Macdonald  
UDOT Environmental Scientist  
4501 South 2700 West Box 148450  
Salt Lake City, Utah 84114-8450  
(801) 965-4917

## 2. CLOSURE PLAN

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### 2.1 CLOSURE PLANS AND SPECIFICATIONS

Detailed plans and specifications for the landfill closure operation are included as Appendix A of this document. In general, the existing landfill wastes shall be excavated, transported and re-placed within the existing site boundaries. The majority of municipal waste will not be moved at all, but will serve as the base upon which the remaining excavated wastes shall be placed (see Figure 3). All municipal and construction waste currently outside the proposed new landfill cell footprint shall be placed within the constructed landfill. The overburden soils currently covering the waste shall also be placed within the final cell.

The landfill will be capped with a geosynthetic clay liner underlain by 12 inches of subbase material and covered with 12 inches of protective layer and a 6-inch vegetative layer (see Figure 6). The source of the subbase and cover material will be on-site fill material that has been tested to meet the project specifications. The completed landfill surface will be sloped 2% to facilitate stormwater runoff and the side slopes shall not be steeper than 3:1 (horizontal:vertical). Engineering calculations for slope stability were performed using data collected from actual site soil samples and the specified GCL material. The stability analysis is presented in Appendix B. Stormwater features were designed to control a 25-year, 24-hour storm event. Calculations used to demonstrate the adequacy of the stormwater control design is included in Appendix B. The proposed final facility topographic and drainage plans are included in the attached plans and specifications.

Final cover will be vegetated with compatible plant species to limit erosion. Seeded mulch will be used to reduce soil erosion during seed germination. The excavated and/or disturbed portions of the site outside the landfill cell will also be revegetated to limit erosion of the larger construction site.

Eight passive methane vent wells will be installed within the landfill cell at a frequency of greater than one per acre (8 wells over 6 acres). The wells will be installed into native soil below the base of the waste and screened across the full thickness of the waste (see figure 7). Additionally, three methane monitor wells will be installed along the eastern property line to depths of 75 feet to monitor for methane gas migration in the direction of the nearest residences. The passive vent and monitor well locations are shown on Figure 4.

Final closure sampling of soil beneath the removed waste cells will be performed on an ongoing basis as the waste is removed. The soil sampling will be used to verify that metals concentrations in the soils beneath the waste meet background metals concentrations. The background metals concentrations will be established by composite sampling of the soils in the vicinity of the landfill. The soil sampling and analysis plan for landfill closure is included as Appendix C. When soil sample results indicate remaining the site soils meet background concentrations, and the landfill cell has been constructed in accordance with the plans and specifications, the site will be considered closed upon the approval of Salt Lake Valley Health Department.

## 2.2 PROCEDURES TO CONTROL NUISANCES AND DISEASE VECTORS

### 2.2.1 Unsightliness, Dust, and Odor

Unsightliness, dust, and odor will be controlled by (1) timely placement of final cover over the refuse fill; (2) proper maintenance of haul roads (grading and watering); (3) application of fine water spray or dust palliative on disturbed work areas, soil excavation areas, and soil stockpile areas where conditions may result in fugitive dust; and (4) planting and maintenance of vegetated cover after landfill closure.

### 2.2.2 Litter

The construction contractor will use a litter collection program during landfill closure to minimize the impacts of litter on site and in the area surrounding the site. This program will consist of various activities designed to reduce windblown litter, including minimizing the size

of the active face to reduce the area of wastes exposed to wind, erecting temporary litter fences downwind from the active face, and adjusting the height and length of litter fences to maximize their effectiveness in trapping windblown litter.

### 2.3 CLOSURE SCHEDULE

The landfill closure is scheduled to begin in January 2003 and be completed by March 31, 2003.

### 2.4 CLOSURE COSTS

The final construction costs to move and place the waste, construct the prescribed cap and stormwater control features, install the methane vent and monitor wells and provide quality assurance construction oversight have been bid at \$700,000. Additional costs to vegetate the landfill and adjacent site, perform construction surveys, provide public notification and any other miscellaneous project costs are not anticipated to exceed \$200,000. Therefore, the landfill closure costs are anticipated to be just below \$1,000,000.

### 2.5 FINAL INSPECTION

Once the waste has been consolidated and the final cover constructed and revegetated in accordance with the plans and specifications, UDOT will contact Salt Lake Valley Health Department to arrange a final inspection of the facility.

### 2.6 POST-CLOSURE CARE AND SITE USE

Following site closure, UDOT anticipates deeding the property to the City of Taylorsville along with adjacent property to comprise 22 acres. If the City accepts the property they will then be responsible to perform post-closure monitoring and maintenance of the landfill. Until the final negotiations and acceptance by Taylorsville of the property, UDOT is the recognized owner and responsible party for the closure as well as post-closure activities. As such, UDOT is responsible for any required financial assurance for closure and post-closure care. At such time that

Taylorsville accepts ownership of the property they will be responsible to demonstrate financial assurance for post-closure care as required by Salt Lake Valley Health Department.

The landfill area is anticipated to be used by the City of Taylorsville as a public park along with the adjacent acreage (22 acres total). If the City acquires ownership of the landfill and elects to develop the landfill cell as a park and change the closed landfill cell in any significant way, they will be required to submit a permit application to Salt Lake Valley Health Department and secure approval from the Department for the desired alterations.

The post-closure plan is presented in the following section.

### 3. POST-CLOSURE PLAN

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#### 3.1 LANDFILL GAS MONITORING

Landfill gas monitoring will be performed for up to 30 years (or as long as SLVHD determines is necessary to protect human health and the environment). Landfill gasses will be monitored quarterly at three locations along the eastern perimeter of the closed landfill to assess the possible lateral migration of landfill gases. Due to the estimated 50+ foot depth of municipal waste that is in contact with native gravelly soils along the eastern boundary of the proposed landfill cell, the eastern perimeter is expected to have the greatest potential for gas migration to approach a property boundary. The locations of the methane monitor well locations are presented in Figure 4. The wells will be monitored with a hand-held field explosive gas meter calibrated against a methane standard. The percent of explosive gas (expressed as a percent of the lower explosive limit (LEL) for methane) will be recorded at each location. If readings exceeding 100 percent of the LEL (greater than 5% methane in air) are recorded from any well, the regulatory agencies will be notified and corrective action will be initiated.

The passive methane gas vents installed within the landfill cell are intended to allow methane to escape to the atmosphere that would otherwise build up beneath the landfill cap. These vents are anticipated to contain measurable concentrations of methane. The vents will be monitored semi-annually and the methane concentrations recorded. These measurements may be used to demonstrate decreased landfill gas generation over time and may eventually be used to demonstrate that landfill gas generation is no longer a potential threat to human health or the environment. If it can be demonstrated that landfill gasses no longer present a concern, the facility's responsible party may petition to end the quarterly landfill perimeter well monitoring.

### 3.2 MAINTENANCE OF LANDFILL GAS MONITORING/VENT SYSTEMS

The LFG monitoring system will be inspected quarterly in conjunction with the scheduled monitoring (see Section 3.1). The system will be repaired and parts replaced as required to maintain system capabilities for 30 years after landfill closure. Quarterly maintenance will include cutting weeds in a 2-foot radius around each well.

### 3.3 MAINTENANCE OF COVER AND DRAINAGE SYSTEMS

#### 3.3.1 Final Cover

A post-closure maintenance program will be implemented at the landfill in order to maintain the integrity of the landfill's final cover for a 30-year period. The final cover areas will be inspected quarterly for evidence of erosion, ponded water, odor, exposed refuse, cracks, settlement, slope failure, and leachate seeps. The landfill's final grades will be inspected and maintained in order to maintain their integrity. Areas where water has collected (ponded) will be regraded. Erosion damage resulting from heavy rainfall will be repaired.

Cracks in the final cover will be scarified and recompact or sealed with a bentonite slurry. Any erosion damage, which may be caused by extremely heavy rainfall, will be repaired. Temporary berms, ditches, and straw mulch will be used to prevent further erosion damage to soil cover areas until site conditions permit the final cover to be re-established and vegetation to be reseeded. Preventative maintenance for the final cover should preclude problems regarding leachate generation from infiltration of surface water, gas venting through the cover, and vectors attracted by exposed refuse.

#### 3.3.2 Drainage System

The integrity of the final drainage system will be maintained throughout the 30-year post-closure period. The final drainage system will be evaluated and inspected for ponded water and blockage of and damage to drainage structures and swales on a quarterly basis. Where erosion

problems are noted or drainage control structures need repair, proper maintenance procedures will be implemented as soon as site conditions permit so that further damage is prevented. Temporary repairs will be made until permanent repairs can be scheduled.

### 3.4 POST-CLOSURE MAINTENANCE AND MONITORING COSTS

The following table presents estimated post-closure maintenance and monitoring costs for the closed UDOT landfill. The estimated total post-closure cost is \$512,329.57 for the 30 year post-closure period. This estimate is adjusted for inflation at 3% per year.

Item	Events/ Year	Annual Cost	Estimated Total Cost
Landfill Gas Monitoring and Reporting	4	\$ 4,000 <sup>1</sup>	\$186,301.66
Landfill Gas System Maintenance (average)	1	\$ 2,000 <sup>1</sup>	\$93,150.83
Cover and Drainage System Maintenance	1	\$ 5,000 <sup>2</sup>	\$232,877.08
<b>Total:</b>		<b>\$11,000</b>	<b>\$512,329.57</b>

Notes: Cost estimates assume maintenance and repairs will occur periodically over 30 years; annual cost is an average over the 30-year period.

### 3.5 POST-CLOSURE CONTACTS

At this time UDOT is the property owner and responsible party for closure and post-closure activities. Therefore the post-closure contacts are the same as the closure contacts listed in Section 1.5. If the City of Taylorsville accepts ownership of the property they will then submit post-closure contacts to SLVHD.